Anesth Pain Med 2021;16:116-117
pISSN 1975-5171 • eISSN 2383-7977

Letter to the Editor

Change of inspired oxygen concentration and temperature in low flow anesthesia

TO THE EDITOR: For low-flow anesthesia, the anesthesia workstation, monitoring technology and desflurane, sevoflurane, which were a low blood-gas partition coefficient, have gradually been adopted. Low-flow anesthesia is considered effective in maintaining the heat and the moisture of the breathing circuit and preserving the mucociliary function of the respiratory tract. In addition, it is safer and more effective at lowering the economic burden and global warming potential [1,2]. We read, with interest, your paper on "Change of inspired oxygen concentration in low flow anesthesia" (*Anesth Pain Med* 2020; 15: 434-40). We appreciate your results and have some questions to discuss.

We have a few questions about the monitoring and the maintenance of body temperature. How did you maintain and monitor the temperature of the operating room? Was the patient's temperature measured only in the esophagus? What was the depth of the esophageal temperature probe? Depending on the room temperature and the depth of insertion, the body temperature can change with ambient influences, such as blood flow of venous return and inhaled gas temperature [3]. Therefore, the authors used a heated breathing system and a heat moisture exchanger (HME) to heat the breathing circuit. During anesthetic care, the patient's temperature did not show a statistically significant change after 60–75 min of low flow. However, it started increasing significantly after 120 min of low flow.

In this study, soda lime (CO_2 absorber) and a standard circular rebreathing circuit with a heated breathing circuit were used. Did you use the HME in the heated breathing circuit? One CO_2 molecule, exhaled by the patient, produces two water (H_2O) molecules and generates approximately 40°C of heat during its reaction with soda lime. The moisture and heat generated by the reaction are sufficient for the patient's humidification and warmth during anesthesia 30 min after induction [1,4]. Therefore, if a low-flow system is used, there is no reason to use a heated breathing circuit and HME, sufficient heat and moisture can be maintained without a heated breathing circuit and HME [1–5]. We think that the increased temperature within the circuit is not an advantage but a problem caused by adding the heated breathing circuit and HME during low flow rather than high flow. What do you expect to get if you do not attach either of or both the heating breathing circuit and HME?

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Received December 8, 2020; **Accepted**: January 13, 2021
https://doi.org/10.17085/apm.20095

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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Methodology: Hong Seuk Yang. Writing - review & editing: Dong Ho Park. Supervision: Chang Young Jeong.

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